Information Management

Managing Web Content

Applying the Information Management Framework to Web Resources

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Alberta
GOVERNMENT OF ALBERTA

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About This Guide

Increasingly, ministries within the Alberta government are using the World Wide Web (also commonly referred to as the Internet)[1] to make information available to Albertans and others and to deliver programs and services.

In addition to publicly available information, Internet technologies are also becoming increasingly popular for information dissemination to specific client groups and committees through password protected **extranets** and to individuals *within* government organizations on internal **intranets**.

All of this information is a valuable asset of the government. It must be managed according to the principles and directives of the Government of Alberta's Information Management Framework[2] to protect its value to the government and the people of Alberta.

This guide provides an overview of those aspects of information management (as described in the Government of Alberta Information Management Framework) that impact on managing web content. It can be used by managers of Internet, extranet, and intranet sites. It provides guidance on managing web content throughout its life-cycle: planning, creation and production, ongoing maintenance, and retention/disposition. It also provides advice on evaluating the usability of web content and identifying the accountability and responsibility of various people in the organization.

The breadth and depth of information on Internet, extranet, and intranet sites varies widely across government. As well, coordination and governance structures also vary. This guide outlines management principles that you should consider, regardless of whether the site is for public access, limited to a small group of clients and stakeholders, or for internal use within your

[1] Technically, the Internet is much broader than the World Wide Web (WWW or web). However, for many users, the two are synonymous. Throughout this guide, we use the term web to refer to web sites that are available through the Internet. This allows us to distinguish management of information available through other uses of the Internet (for example, electronic mail and news groups).

[2] The framework, "Managing Information Assets in the Government of Alberta," was adopted by Deputy Ministers' Committee in April, 2003. It is available at www.im.gov.ab.ca.

ministry. The actual management practices you employ will, of course, vary depending on the complexity and purpose of the site.

Who should use this guide

This guide has been developed for those individuals in the Alberta government who plan, implement, evaluate and maintain information products and services available on government web sites. This includes information technology (IT) and information management (IM) managers and specialists, communications personnel, web developers, records management staff, content providers, and business managers.

You may want to adapt this guide to meet your specific needs and conditions. In doing so, there are a number of groups and resources you may want to consult. These include:

- Public Affairs Bureau (PAB). The Public Affairs Bureau manages the main Government of Alberta web site and leads standards development for all Government of Alberta web sites. The PAB chairs the Cross-Government Internet Committee.
- Cross-Government Internet Committee (CGIC). Each ministry has a representative on the CGIC to coordinate standards across government.
- Information Management, Access and Privacy, Alberta Government Services (IMAP). IMAP provides cross government coordination related to access, privacy, and records and information management.
- The Information Technology Advisory Committee (ITAC) sets standards pertaining to web components, utilities, tools, enterprise application integration, and protocol interoperability. The Standards for Web Application Protocols (SWAP) working group is addressing these standards on behalf of ITAC.
- Cross-Government Web Server Support Team, Alberta Innovation and Science and Alberta Corporate Service Centre. This team provides TCP/IP connectivity to the Internet; manages web servers available to government departments, boards, agencies and commissions; manages Internal Information Exchange web pages for Alberta government employees and provides other services related to Internet technologies. Detail on their services are available at: https://extranet.gov.ab.ca/techinfo/interug/index.html
- The "Web Content Management Resources Guide," a companion guide that provides links to resources from other jurisdictions that relate to web content management. It is available at www.im.gov.ab.ca.

The Information Management Framework (IMF) and web content management

The IMF applies to all information assets within the government. The framework has six core principles:

1. **Accessibility**: Information is easily accessible to those who need to use it and are authorized to access it.
2. **Usability**: Information meets the needs of employees, clients, partners, and stakeholders and is timely, relevant, accurate and easy to use.
3. **Accountability**: Accountability for the management of information in the custody or under the control of each ministry is clearly defined.
4. **Integrated Approach**: Information assets are managed throughout their entire life-cycle regardless of the medium in which they are held.
5. **Planned and Coordinated Approach**: Coordinated planning for the management of information is linked to business and budget planning.
6. **Optimize the Value of Information Assets**: Information assets will be managed to optimize the investment of the Government of Alberta.

Under each of these principles are three directives that ministries must act on to ensure that information assets are properly managed. Table 1 on the following page lists the directives that have a particular impact on the management of web content. The table also identifies the potential implication for web content management and what section of the guide to turn to for advice.

Table 1
The IMF and Web Content Management

IMF Directive	Implications for Web Content Management	Applicable Section of this Guide
1.1 Ministries must ensure that information systems are designed and implemented to easily locate and retrieve information, and to facilitate sharing of information within ministries, across government, and with other levels of government and with Albertans, subject to legal constraints.	• Planning web content • Managing production of web content	2 3
1.3 Ministries must establish plans for the electronic delivery of information to stakeholders and the public, including standards for service level commitments.	• Planning web content • Annual web management plan • Evaluating web content	2 7 5
2.1 Ministries must establish and apply quality control procedures to ensure the information they produce is based on the demonstrated needs of users, is accurate and reliable, and is easy to use.	• Planning web content: identifying user needs • Ongoing maintenance of web content • Periodic evaluation and performance measurement	2 4 5
2.2 Ministries must establish procedures to regularly review the value of information products and services for intended users, including the disposition of information that is no longer useful.	• Periodic evaluation and performance measurement	5
2.3 Ministries must assess opportunities for leveraging the value of information through cross-ministry sharing of information, combining information from several ministries to create new information products, and ensuring that existing information is available to meet new business challenges.	• Planning web content • Annual web management plan	2 7

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3.3 Ministries must develop accountability structures related to information management practices.	• Coordination, accountability and skills development	6
4.1 Ministries must implement plans and practices related to the life-cycle of information – creation, capture or collection; organization; storage, access and use; and disposition (destruction or permanent retention).	• Managing production of web content • Ongoing maintenance of content: keep web records	3 4
4.2 Ministries must ensure that information, regardless of type or the medium in which it is stored, is managed under the same principles and is captured in appropriate systems so that information can be organized and described to facilitate access and ongoing management of the asset.	• Managing production of web content: use of Meta tags • Ongoing maintenance of content: keeping web records	3 4
4.3 Ministries must identify core competencies related to information management and provide skills development opportunities to ensure staff acquire these competencies.	• Coordination, accountability and skills development • Annual web management plan: skills development	6 7
5.1 Ministries must integrate information management planning into the business and budget planning cycle, highlighting major IM strategies in the annual ministry business plan.	• Annual web management plan	7
6.1 Ministries must identify intellectual property assets that are information-based to be protected in business transactions.	• Managing production of web content: crown copyright notices	4
6.3 Ministries, in cooperation with the Provincial Archives, must ensure that information created by government that is of permanent and enduring value is preserved.	• Ongoing maintenance of web content: keeping web records; long term, archival retention	4

2.
Getting Started: Planning Web Content

Introduction

Web sites are used for a number of purposes, including:

- disseminating (publishing) and sharing information;
- providing advice;
- working collaboratively;
- advertising goods and services;
- providing online services;
- conducting business transactions;
- soliciting responses and feedback; and
- providing a public record of special political, social or cultural events.

The key to effective web content management starts at the planning phase. This section of the guide discusses:

- understanding the diversity of web based resources;
- setting objectives for your content;
- assessing and documenting user needs; and
- setting service delivery standards.

The diversity of web-based resources

Web sites today come in many different forms. These range from simple collections of static pages that display the same information to all visitors, through to pages which are created and displayed dynamically in response to specific queries. In addition, many web sites now *do* something – they enable information about visitors to be captured, online orders to be taken and personalized information to be displayed based on user profiles. Thus, some web sites can be considered to be more like applications than a set of publications.

Static web sites and web resources

In its most basic form, a web site may be nothing more than a collection of static documents, sitting in folders on a server, and tied together through the use of hyperlinks. These documents share a common address – the domain name in the uniform resource locator (URL), such as 'www.gov.ab.ca'. A static web site maps URLs directly to file locations on a server. The only interactivity provided by static sites is in the links which enable movement from one document to another or from one part of the site to another.

Static web sites and web resources with form-based interactivity

Many web sites use forms to collect information, such as comments and requests, from visitors. While these sites are still largely static electronic publications, if you manage such a site you still need to pay attention to:

- the information provided when the visitor fills in the form (usually stored in a 'back end' information system such as a database);
- the form itself; and
- the human readable source code of the script or program which enables the form's functionality.

Web sites and web resources based on dynamic data access

Web sites are sometimes used as front ends, or user interfaces, for accessing your ministry's databases. Site users search prepared lists or put together their own searches which, in turn, query the content of a database. The information returned from these queries is displayed as an electronic (usually through the use of HTML (HyperText Markup Language)) document to the user.

In many cases, documents that result from a query to a database can be bookmarked. The criteria of the query itself will be included in the URL that is bookmarked, so that the user can return to it later without reconstructing the original search query manually.

Dynamically generated web sites and web resources

An increasing number of web sites are being built which generate all of the pages "on the fly." This means that the component parts of each individual page – its content, structure and presentation – are generated dynamically using a combination of databases and style sheets based on:

- a stored set of user preferences;
- a stored set of access profiles;
- a user query;
- the capabilities of the user's browser;
- how the user has configured their browser;
- filtering devices on the user's system; (for example, software that blocks advertisements or access to certain sites); and/or
- the platform the user is using to access the page (for example, handheld devices or desktop computers).

In these situations, the web site does not exist in any single or easily capturable form. Each user sees a different 'site' based on their stored preferences and access rights, current needs, and the capabilities or limitations of the technology they are using.

Although the end result for the user might be a set of apparently static pages, the processes which build the pages involve the use of a number of variables. This is the point at which web sites become more like applications than static electronic publications.

Defining objectives

Value proposition

You need to create and document the value proposition of your web content. A value proposition should state expected benefits and explain the facts, assumptions and perceptions underlying your assessment of the initiative's "value."

In most cases, a value proposition can be stated in a few lines. It should answer the following questions:

- What are the objectives of your web content?
- What value does your web content add to the client and/or your business?

Identifying objectives

What are the objectives of your web content? For example, will it help you:

- provide general information;

- educate clients;
- provide reference information;
- support decision makers;
- handle transactions;
- interact with the broader community;
- gain a competitive advantage;
- develop or improve consultation;
- provide or publish ministry information;
- promote the image of the program area or the entire ministry; or
- integrate the wide range of information available across the organization?

In articulating your objectives, you should also identify what are the expected outcomes. By setting measurable goals, you can assess the success of your content in the future.

Documenting user needs

Developing effective and usable web content means starting from the perspective of the users of the information or service. To do this you have to carefully identify who the various users are for your site, then evaluate their needs.

If you are managing web content with partners or stakeholders, you'll want to work with and coordinate the information gathering with them.

Identify users

Identify your target users as precisely as possible. Are there identifiable segments? Describe each type of user in terms of demographics, attitudes, technical capabilities and communications behaviours. This will assist you in developing content and structure that will best meet their needs.

To identify your users, you can:

- identify major client groups for your program area, and identify related stakeholder groups and associations;
- develop a profile of clients by pulling together existing client data from individual program areas;

- gather existing client data from surveys, focus groups and other research that your ministry has conducted; and
- do specialized research (such as conducting focus groups, on-line surveys or a field survey) to obtain more detailed client information.

You will need to bring together data from a variety of sources to develop a good profile of your clients and their potential Internet needs.

Determine user needs

After you have identified the target users of the product or service, you need to articulate the needs of each segment of your users. The following questions can help you articulate user needs.

- What information do the members of this segment want and need?
- How will they use the information?
- What adds value to the information for the users? Currency? Breadth? Depth? How is the information they get going to be used in combination with other information?
- Do they have preferences about the structure or layout of the content?
- Do they need any kind of interactivity? Do they need to contact you? Provide feedback? Order products or services?
- What other sites are they going to for this or similar information? Should you be linking to or from these sites?
- What kind of security and privacy protection do they need when interacting with your product or service? Will secure financial transactions be required?

Methodologies

You may already have the answers to some of these questions, or at least think you do. However, in many cases, you will need to conduct a more objective and comprehensive user needs assessment.

Some possible research techniques include:

- focus groups;
- surveys;
- information from customer service centres and call centres; and
- personal experience and feedback from staff.

Focus groups, with representatives of the various segments of users, can be one of the most effective tools for assessing user needs. Once you have identified the key issues, concerns or needs, a survey can then provide more quantitative results which can be used for benchmarking and tracking client satisfaction over time.

Some tips on assessing user needs include:

- identify all key audiences;
- consider the role of intermediaries, who may often be using your site to get information that will be used by others; and
- include both frequent and infrequent users of your site.

Assessing service levels

As a service provider, you should determine how much clients need the services and information you provide. You must also balance the accuracy, the responsiveness and the availability of the information against the costs of providing the right level of service.

To determine and maintain the appropriate level of service, take the following steps.

1. Measure how a lack of information affects clients. Formal definitions of client dependency will help you determine levels of service needed. Evaluate the consequences of poor service. If your information is inaccurate, or your service is unavailable or slow, will that:
    - threaten anyone's safety or health;
    - hurt your client's ability to do business;
    - have a serious personal impact on your clients;
    - affect your client's productivity;
    - cause your clients to lose face or credibility;
    - create a politically embarrassing situation; or
    - give rise to complaints from special interest groups?
2. If you proceed, the next step is to determine the probable size of your client group. State the size of the expected client group and number of concurrent clients, and add this information to the service level definition.
3. After determining required levels of accuracy, responsiveness and availability, and the expected number of clients, you can attempt to

estimate the resources needed to support your information service. Document why you reached the decisions you did and the costs involved.

4. Determine and document the measurement and tracking systems that will allow you to verify that service levels are being met, and make arrangements to implement these.
5. Plan and document how you will sustain levels of service as your initiative offers more features and the number of clients grows.
6. Knowing the impact of your services and information on your clients, the service levels you need to deliver that information effectively and the costs of meeting that service level, you can now do one of the following:
    - decide that the costs are worth the benefits and proceed;
    - re-examine and revalidate the decisions you've already made and possibly redefine service levels accordingly;
    - look for alternative methods of meeting the defined service level; or
    - drop the project as not offering sufficient benefit for the cost.
7. If you decide to proceed, formally state your reasons and decisions in a service level definition. This will inform others — your staff, your clients and any partners such as vendors or contractors — not only what must be achieved, but why.
8. Set your clients' expectations — in advance, if possible — by informing clients of the level of service you intend to provide. You can do this in information describing your new service. Within the web site, offer the client a way to know what level of service you intend to provide.
9. Monitor feedback on the operation of your web site. This feedback can come from performance management software, simple operating system or application statistics, and clients' comments or complaints. Make sure your clients can submit feedback. For public sites, Alberta Connects is an easy way for clients to provide this feedback to you.

3.
Managing Production of Web Content

This section of the guide covers issues that you need to address when managing the production of web content. These include following Government of Alberta Web Site Standards:

- visual identity;
- accessibility;
- content duplication; and
- plain language.

During design and production, you'll also need to plan for the following:

- collecting personal information;
- protecting privacy;
- protecting intellectual capital;
- using metadata and metatags; and
- government records management requirements.

Visual identity

The Government of Alberta Web Site Standards ensure that all Alberta government web sites have consistent visual identity and key navigation elements. These standards are available at www.gov.ab.ca/pab/standards.

Accessibility

For many people, gaining entry to web content is more complicated than clicking a mouse and operating a modem. Some Albertans rely on assistive technologies such as screen magnifiers, text readers, audio players and voice activated devices to overcome the barriers presented by standard technologies.

Thanks largely to the efforts of the World Wide Web Consortium (W3C) Internet accessibility has become a global issue that commands the attention of software and system designers during the development phase. Seamless transformations, context and orientation, and usability are all key factors in

designing a web site that is available to everyone, and can be interpreted by the technologies they use. W3C's *Web Content Accessibility Guidelines*, a comprehensive set of recommendations published in 1999, have already been recognized by the international standards community. On one hand, the guidelines aim to meet the needs of people with disabilities who rely on electronic devices to maximize the use of their computer systems. On the other hand, the guidelines also assist individuals who are using advanced technologies such as mobile and voice web page viewing technologies, and electronic agents such as indexing robots. Like all standards, WAI guidelines will evolve over time, as developers and users become more proficient in applying new technologies to Internet usage.

The Cross-Government Internet Committee is currently developing accessibility standards for Government of Alberta web sites.

Content duplication

Take all necessary measures to ensure that the content you plan to publish is not duplicated on another ministry web site. If the content you wish to publish is the responsibility of another ministry and has already been published on their web site, provide a short summary of the content and a link to that site rather than duplicating the content. The Cross Government Internet Committee (CGIC) is establishing protocols around content duplication on Government of Alberta web sites.

Plain language

The Government of Alberta is committed to communicating in plain language to Albertans. Use a good web-writing style and techniques to make the content easy to read and understand by the intended user.

Collection of personal information

The collection of personal information is governed by the *Freedom of Information and Protection of Privacy* (FOIP) *Act.*

Most web sites allow the user to e-mail an employee of the department (e.g., "Ask the Expert," or "Feedback" to the web master). Many sites also have forms that users can fill out to receive further information, become part of a mailing list or listserv® or to join a discussion group. Almost all of these instances involve the collection of personal information.

Moreover, as more and more ministries use the Internet to carry out transactions with clients, they will collect personal information that is protected by Part 2 of the *Freedom of Information and Protection of Privacy Act*.

In cases where traditional paper collections of information are supplemented or replaced by electronic forms offered through a web site, the rules of the FOIP Act continue to apply.

For situations where a notice is required in the paper-based world, the general principle is that the equivalent notice is required in the online world. You should have a link to the appropriate privacy notice at the point where the information is collected. The notice should state under what authority you are collecting the information, how this information is to be used, if and how it will be retained, and to whom (and in what form) it may be disclosed.

It is also a good practice to warn the person that, while the information submitted will be protected once it reaches your site, the Internet is not totally secure and you cannot ensure that the information will be protected during transmission to your site. [Note: If your site accepts monetary transactions, it MUST be secure.]

Your ministry's FOIP Coordinator should be consulted when the site collects personal information.

Protecting privacy

Several online surveys have indicated that privacy is a major concern of Internet users – concerns such as lack of transparency regarding the use and disclosure of personal information by web sites, the tracking of an individual's activities on web sites and concerns about the security of their personal information in the Internet environment.

There are a wide variety of uses of the Internet across the Alberta government. For this reason, it is impossible to develop a single privacy statement that would cover all uses and circumstances under which personal information might be collected. The content and functionality of an individual web site will determine what kind of privacy statement you require.

For example, a very simple site that just provides information may only require a general privacy statement. However, managers of sites that collect personal information from users need to ensure that the requirements of sections 33 and 34 of the FOIP Act are met. The Guide to Developing Privacy Statements for Government of Alberta Web Sites provides sample

statements from which you can build a privacy statement that is appropriate for the content and functionality of your site. At the end of the Guide, there are two sample privacy statements to show you what a complete statement might look like.

The Platform for Privacy Preferences (P3P) is an international standard for the protection of privacy. The Cross Government Internet Committee has established a sub-committee to develop standards for P3P privacy statements.

Domain names

The Government of Alberta owns many existing domain names, the most important of which is "gov.ab.ca." New web sites can be created easily if they are suffixed by "gov.ab.ca" and no domain registration is required as the government already owns this domain. All that is needed is a new entry in the Domain Name Service (DNS) server.

However, for various reasons, some projects and programs purchase non-government domain names (e.g., alberta-canada.com and ServiceAlberta.ca).

All domain names cost money. Whenever a new domain name is set up, you need to maintain the domain name by renewing it on a periodic basis. The registration period is something that you typically select when you first purchase it. If you use any domain name other than a "gov.ab.ca" name, you must maintain the registration of the name.

If you have content that uses a more colloquial URL and has value to your business, such as www.naturalhazard.gov.ab.ca, you might consider registering alternate domain names. For example, many ministries register domain names for the .com, .org, and .net domains in order to protect the integrity of its information. This will allow you to reduce the risk associated with others misrepresenting themselves as a government site when, in fact, they are not related to government. Keep in mind there is a cost to registering and maintaining these names.

Whenever possible, you should use the "gov.ab.ca" domain name.

Protecting intellectual property

Crown copyright

Copyright of Alberta government web sites belongs to the Province of Alberta. The Government of Alberta Web Site Standards mandate that every Government of Alberta web page will link to a standard copyright notice and terms of use. The standard Copyright Notice will be located in the footer of a web page and will appear as follows:

> The user agrees to the terms and conditions set out in the Copyright and Disclaimer statements.
> Copyright © [year] Government of Alberta.

The standard "Copyright and Disclaimer" document that is linked to from the Copyright Notice should reflect the copyright conditions of the web page or document, and be based on a common, government-wide format. The standard copyright, terms of use, disclaimer statements are:

COPYRIGHT AND DISCLAIMER

A. Copyright and Terms of Use
This material, including copyright and marks under the Trade Marks Act (Canada), is owned by the Government of Alberta and protected by law.

Permission Statement
This material may be used, reproduced, stored or transmitted for noncommercial purposes. However, Crown copyright is to be acknowledged. If it is to be used, reproduced, stored or transmitted for commercial purposes, arrange first for consent by contacting [insert contact information].

B. Disclaimer
Information at this site is provided solely for the user's information and, while thought to be accurate, is provided strictly "as is" and without warranty of any kind. The Crown, its agents, employees or contractors will not be liable to you for any damages, direct or indirect, or lost profits arising out of your use of information provided at this site, or information provided at any other site that can be accessed from this site.

If the standard statements do not apply to your site, web page, or web document, contact your legal department or Alberta Justice, Civil Law for help in developing statements that meet your needs. For additional guidance,

please consult the Government of Alberta Web Site Standards published by the Public Affairs Bureau.

Use of content where others have copyright

The Government of Alberta prefers that externally sourced information be linked to rather than published on a Government of Alberta web site. However, if you do publish information from external sources (that is, third-party information) on your web site, either as an excerpt or in its entirety, you should obtain written permission to use the information from the third-party author, and directly attach a liability disclaimer to the document with a Copyright Notice posted below it as follows:

> Copyright © [date] by [author/owner].

Metadata and metatags

Metadata is information about the information you have published. It helps you identify, manage and find documents. Although it is key to managing your Internet and Intranet documents in a way that is consistent with all records management requirements, web technologies also make special use of metadata.

On the Internet and Intranets, metadata is used to help users search for the information they need, and find out quickly what information a document contains. This is often done through a search engine or directory that allows you to search by key word, and will provide you with a list of relevant documents with brief descriptions.

All web documents should, at a minimum, include the following metadata elements:

- **Title**: A descriptive Title for the document.
- **Description:** A metatag that is a short summary of your web page contents.
- **Keywords:** The topic of the resource, typically expressed as keywords or phrases that describe the subject or content of the resource, using controlled vocabularies.

You may also want to include other metadata elements to help you manage the information. These elements include:

- **Author:** The author and/or business unit.

- **Key Dates:** The dates the documents was created and revised.

Metadata standards are currently being developed for Government of Alberta information resources by the Metadata Expert Working Sub-group (MEWS). For more information on metadata elements for web sites and web documents, you can consult the Government of Alberta Web Site Standards at www.gov.ab.ca/pab/standards.

The Privacy Taxonomy in the Government of Alberta Privacy Architecture is a metadata standard for personal information. If your web site collects, uses or discloses personal information, you may need to consider supporting the privacy taxonomy, especially if the web site is linked to databases in your ministry.

Determine requirements for records management

Records created are the property of the Government of Alberta and information created, compiled or received on the web site are government records and subject to the various provisions of the Records Management Regulation.

Assessing records management needs is crucial. You will need to assess the complexity of the records and records management requirements to ensure 'full and accurate records' are captured and maintained.

The capture of a record of web-based activity, together with sufficient metadata, should occur at the time the resource is posted to the web site and the record created.

Your electronic information management (EIM) or content management system should allow you to document classification, retention, disposition and other relevant information.

The extent of maintenance required to preserve the functionality of electronic records will also need to be determined by this assessment. A relatively static web site comprising simple documents with low interactivity will have different requirements for maintenance than a complex web-based document or highly interactive web site.

Some web sites will offer significant functionality requiring additional web-based records to be created and captured (i.e., a multimedia document may require the capture of plug-ins to maintain its functionality). A number of technological options are available to ensure that additional functionality (and

the generated web site records) are captured into your ministry's records system.

Each circumstance may require a different strategy to ensure record functionality can be maintained. Each ministry has appointed a Senior Records Officer who is responsible for managing ministry records. Work with your Senior Records Officer for your organization to develop your strategy for managing your web records as government records.

4.
Ongoing Maintenance of Web Content

A good content management system, whether you operate it as a separate application or as an integrated application for electronic information management (EIM), can help you in your ongoing maintenance of web content. Ongoing maintenance of web content involves three primary considerations:

- updating and reviewing content;
- maintaining web records as records of business activities; and
- long-term, archival retention of web content.

Updating and reviewing

Users of web content have an expectation that web content is up-to-date, accurate and complete. Your web content management system should be able to help you monitor the following:

- **Currency:** Keep the information up-to-date. Set up regular reviews of content. You can establish the update cycle in consultation with authors and content providers.

- **Maintaining relevant information and "expiration dates:"** Content that was published earlier may still have value to your users for historical purposes. If so, this content should continue to be available on the site (although maybe in a separate "archives" or "library" section). However, some content should not be maintained. It should be deleted from the site when it is no longer relevant or needed by users.

- **Links:** If you use links, such as on an HTML page, ensure that they are accurate and up-to-date. Test and review them regularly. This can be done automatically with web software tools. The Cross-Government Web Server Support Team at Alberta Innovation and Science provides this service for sites on the cross-government servers.

Maintaining web records

Web content is one of many types of government records. As such, Internet, intranet, and extranet content is governed by the Records Management Regulation and associated policies.

Among other things, this means that the relevant retention and disposition schedules apply.

Web site administrators or information technology staff may already carry out the task of creating 'back-ups' of the web site as part of normal data management activities. However, because these back-up copies are created for the purpose of data management activities, they are usually overwritten regularly with more recent versions, or deleted. They are not captured or maintained for records management purposes.

In some cases you may need to recreate or produce evidence of what your web content was on a particular date.

This section outlines some options available for capturing and preserving web-based resources and records of web-based activity. The options suggested are not mutually exclusive. In most cases, you will likely use a combination of strategies designed to fit your circumstances and requirements. Your Senior Records Officer can assist you in selecting a strategy.

Which strategy you use will depend on the type or complexity of the web resources that are being managed, the type of web-based activity you manage, and the results of the analysis of your records management requirements.

If your site is largely a collection of **static** information (e.g., HTML pages), then you might want to consider an **object-driven approach**.

If your site is more **dynamic**, with content changing frequently as a result of queries from users, you might want to use an **event-driven approach**.

Object-driven approach

This approach concentrates on managing the 'objects' that make up your site or are made available through your web site. Object-driven strategies are well suited for web sites that are largely collections of HTML documents and do not rely on complex interactivity with users of the site.

Objects could be complete HTML documents that are stored and available up to the user. Alternatively, objects could be the various objects that are assembled to create an HTML document when a user queries the site (e.g., headers, footers, corporate logos, images and text content).

This approach could entail taking periodic snapshots of collections of web resources in combination with tracking changes to the site and logging transaction details. Alternatively, objects or individual web resources could be separately captured and managed in association with metadata that describes the relationship between specified versions of the object and its unique URL.

Snapshots

A snapshot usually involves creating a complete and accurate copy of your web resources at a particular point in time. The snapshot should be captured into a records system, and maintained over time, for as long as the snapshot needs to be accessible.

When taking snapshots your collections of web resources, it is desirable to ensure (as far as possible) the ability to replicate the content, layout and functionality of the site across technological platforms without loss of data integrity.

A deficiency of snapshots is that the snapshot only provides a picture of a web site at a particular point in time. If snapshots are captured in the absence of other records of web-based activity, it will be impossible to reconstruct the site together with its functionality at any other point in time. Since this method does not enable you to determine exactly when particular web resources were available, if you use the snapshots strategy you should also create and maintain logs of changes made to web resources between snapshots.

A snapshot should include all aspects of the web site to ensure that a fully functional site can be reconstructed. For example, the snapshot should also include scripts, programs, plug-ins and browser software, that is, all components that make the snapshot fully functional. The snapshot should be captured into the records system with sufficient descriptive metadata.

The timing of your snapshots will depend on how static your web content is.

Managing objects separately

This strategy involves managing data objects separately, together with sufficient metadata, to document how each object is associated with a particular universal resource locator (URL). This approach reduces the

burden by focusing on preservation of the data objects, and associated metadata, instead of attempting to preserve entire systems that support web resources.

You should maintain a register or list of the URLs that have been made available on the public web site and capture the data objects made available from these URLs. The relationship or association between the data objects and the URLs should be documented and maintained in a separate metadata store. The information about each URL and data object that should be captured includes:

- the absolute URL;
- the data object;
- the start and end time of the association; and
- possible relationships to other records that document the administrative processes by which the resource was authored and published.

This information enables you to accurately track web resources at any point in time.

Tracking changes

A third method involves tracking changes to the web resources over time and creating a log of changes or activity. The activity log needs to be captured into a records system and maintained to satisfy requirements for accessibility for as long as needed.

Used in combination with snapshots of the web resources, this approach can be a reliable option for static sites.

The main issue arising from this option is the creation of insufficient metadata of the activity log, resulting in the inability to interpret the log over time. It is vital that metadata requirements are specified and sufficient metadata is captured into the records system.

Suggested data elements that can be captured in an activity log include:

- title or name of posting;
- version number;
- author or content manager responsible for creating of the object;
- links embedded in the posting;
- date of initial posting;

- URL of the page;
- date of modification;
- date of replacement or withdrawal; and
- disposal information.

This is not a complete list and you should review and adapt it to make sure your records management requirements are satisfied.

In the case of a static web site, the log should capture changes to individual pages, documents or objects on the web site. Changes to scripts, plug-ins, and forms used to present information will also need to be captured as they will affect the functionality of the records.

It may be possible to use emerging web technologies to track changes. Web robots, spiders or crawlers are automated programs that visit sites for the purpose of indexing sites for search engines. These programs may be useful for tracking changes, provided they gather sufficient information to satisfy records management requirements.

Event-driven approach

Adopting an object-driven approach for web sites that primarily provide transactional services may be futile. In such circumstances, an event-driven approach may be more appropriate. This approach is most suited to the case where a dynamically generated site is database-driven and relies on stored user profiles, search mechanisms, SQL–HTML translation scripts, and other programs to enable full functionality.

This method captures 'events' – single transactions between web site and user – rather than the objects that comprise the site at the time of the transaction.

The timing and extent to which you capture events will be based on the type of transaction. For example, applications and payments will require more rigorous tracking than other types of "events."

An event-driven approach would involve capturing:

- date and time of event;
- IP or domain address of user;
- user profile;
- query or other action performed; and

- evidence of any transaction (e.g., the resource served to the user with relevant metadata attached.)

Logging and keeping records of transactions

Any web-enabled service or transaction facility will generate records. In the absence of a record, there is no evidence of the transaction having occurred. In the absence of legally sustainable evidence of a transaction having occurred, the transaction may be repudiated and/or deemed by a court of law to have not taken place. It is therefore essential that you capture full and accurate records of web-based transactions into records systems that can guarantee the authenticity, reliability and accessibility of the records.

This event-driven strategy involves creating a log of site visitors, capturing the logs and any other records of web-enabled transactions into a records system together with sufficient metadata, and maintaining them as long as required. This option enables the capture and maintenance of evidence of site use, particularly any queries or transactions enabled by the site.

The recording of web-based transactions should be built into the application/database that supports the service.

A final issue to consider is privacy. Most logs of web site transactions will contain personal information about the user. You need to be aware of your responsibilities under the *Freedom of Information and Protection of Privacy Act* with respect to the collection, use and disclosure of personal information.

The elements that can be logged include:

- date and time;
- IP address or domain name of user;
- pages visited;
- actions performed;
- queries made; and
- web browser used.

You will need to select the elements that satisfy your records management requirements.

Archival retention

Under the *Historical Resources Act*, the Provincial Archives of Alberta identifies, acquires and provides access to government records that have enduring value. These records serve to provide an understanding of the responsibilities, functions and actions of the government, and to protect the rights of government and individual Albertans. The Archives prepares Archival Appraisals for all records as part of the records retention and disposition schedule approval process.

Your ministry's records management staff can assist you in determining the requirements for the permanent retention of documents that have been posted on your Internet or Intranet sites, where such retention is required.

Storage and preservation strategies

A number of storage and preservation issues arise as a result of the need to maintain web-based records in an accessible form over time. Some of these issues remain unresolved and are the subject of further industry research.

However, it is crucial for you to be familiar with current preservation issues and best practice recommendations for web-based records.

Hardware and software dependency and obsolescence

All web sites, regardless of their complexity, are dependent on particular pieces of hardware and software to enable full functionality. For example, a site may require a number of applications to function properly (e.g., software plug-ins such as Adobe Acrobat Reader, scripts, applets, search engine). Often, these applications are customized for a specific environment and will only run on a particular hardware configuration or operating system platform.

Computer technology is subject to ongoing technological obsolescence, with both hardware and software quickly becoming outdated as new upgrades and versions come onto the market. Electronic material created under older systems becomes unreadable (and hence inaccessible) in the original form after relatively short periods of time. Agencies taking web site snapshots for online or offline storage need to plan for technology obsolescence.

There are a number of interrelated software and hardware factors which you need to consider when maintaining snapshots of web sites as records, including:

- the evolutionary nature of the standards for markup – the existence of different versions and types of HyperText Markup Language (HTML), each with different functionality, and the increasing use by software developers of eXtensible Markup Language (XML);
- the proprietary, platform-specific nature of many search engines and database query tools;
- the embedding or linking of the correct versions of applications required for functionality, including applets, JavaScript, and software plug-ins;
- the limitations of some (particularly older) browsers, which cause different browsers to produce radically different or incomplete views of web pages (for example, older browsers are not frames-capable and are unable to execute JavaScript, leading to a loss of intended functionality);
- the estimated physical and/or commercial life of the medium on which a web site snapshot and its related descriptive metadata are stored;
- the long-term availability of the hardware and operating system platforms needed to access records stored on different types of media; and
- newer browsers often interpret code differently and are not always backwards compatible.

Maintaining web-based records over time

Ensuring the accessibility of web-based records over time raises the same issues that apply to other electronic or paper-based records. Consider the following issues:

1. **Ensuring records are carefully managed**. This might include:
   - maintaining records in widely accepted technology-neutral storage and data interchange formats such as XHTML and avoiding the use of non-standard HTML tag extensions;
   - maintaining preservation master sets and storing these in a separate location;
   - exercising and refreshing media on a regular basis; and
   - carrying out regular spot checks to monitor the functionality and integrity of records.
2. **Planning for obsolescence by ensuring that records can be copied, reformatted or migrated**. This includes hardware, software, operating system and media obsolescence. Web-based

records and their associated metadata should be migrated as often as necessary to avoid technological obsolescence for as long as the records are required. Any preservation actions such as copying, reformatting or migrating should be documented in the metadata. Any loss of functionality, content or appearance that occurs as a result of reformatting or migration to standard formats should be fully documented in a records retention and disposition schedule.

3. **Using widely supported standards** (e.g., open architecture standards). When designing and building web sites, you should plan to use software tools and applications which meet accepted (or de facto) standards, and which are readily available and fully supported.

4. **Implementing security measures to protect records against either deliberate or accidental alteration**. Some possibilities include:

   - maintaining controlled access to a secure storage facility that enables only authorized staff to access the records;
   - access monitoring, user verification and authorized destruction to protect records from unauthorized access, use, alteration or destruction; and
   - compliance and audit programs to ensure security procedures are maintained ensure security procedures are maintained.

5. **Using persistent identifiers.** You should adopt the practice of using persistent identifiers for your online resources. For as long as a given resource is available online it should have the same URL or online identifier. This means that users of online resources can cite or bookmark resources, confident that the resource identifier that they have quoted will not change.

6. **Ensuring environmental control and monitoring**. This might include:

   - ensuring optimal temperature and humidity levels;
   - protection against magnetic fields;
   - using air filtration units to protect against air pollutants;
   - prohibiting the consumption of food in storage areas; and
   - planning for disaster preparedness.

7. **Selection of storage media.** Depending on recordkeeping requirements, you need to decide whether to capture and maintain web-based records on an offline or online storage medium.

   The size and complexity of the records is one of the determinants of the choice of storage media (e.g., snapshots of sites and activity logs, for example, are likely to consume large amounts of storage space).

   A second determinant is the desired speed of access. There is usually some delay in accessing records stored offline. Options for offline storage include optical disk or magnetic tape. In contrast, online storage provides instantaneous access in the form of a hard drive. However, instantaneous access is more expensive to maintain, especially if you are storing large quantities of data.

   A final determinant is the "shelf-life" of the media and the ability to access the records in the future.

5.
Evaluating Web Content

Ongoing evaluation

An ongoing evaluation plan should be developed and implemented for your web-based products and services.

First you should identify what it is you want to continue to evaluate:

- **Reach**. What percentage of your target audience are you reaching?
- **Use**. How many people visit your site? How often do they visit? What is typically the length of each session? What is the traffic on specific sections or pages?
- **Comprehension and readability**. Can your users continue to understand the information you give them?
- **Usability**. Can users continue to be able to find information on your site? How easy is it to find? How long (or how many "clicks") does it take to get to the information?
- **Cost/Benefit**. Have the benefits outweighed the cost of the site?

There are a number of research tools that can be used in your ongoing evaluation of your site. These tools include:

- **Pop-up surveys.** These should be short, easy to complete, and mostly multiple-choice questions. You should not use them more than once a year as they can be irritating. However, they are an easy way of obtaining quick, inexpensive information on visitor satisfaction.
- **Telephone or mailed surveys.** This technique only works well when you have easily identifiable and reachable users such as with Intranets, or Internet sites for very specialized and cohesive user groups.
- **Focus groups.** Focus groups are easy to organize, and can provide good qualitative information. This method is better for evaluating look and feel, and content, rather than usability.
- **Data collected on visitors.** Visitor tracking data has limited value. Hits alone tell you little, but the tracking data can give you some idea where your visitors are coming from. More useful is identifying how they are finding the site, how they are entering it, and what parts of the site are getting more usage.

Evaluating usability

Usability is a user-focused approach to developing and maintaining information products and services including web sites. Usability applies to all information products and services regardless of medium. Developing your web content with the user in mind, and testing it for usability, ensures that users can find, understand and use information on your site easily and quickly.

To ensure your site is usable requires regular, professional usability testing. There are a number of variables you may want to assess when evaluating a site for usability. These include:

- success in finding information;
- time to find information;
- search strategies;
- ability to comprehend and use information;
- ability to make correct decisions based on the information; and
- error rate on transactions.

There are four methods that are used most commonly when assessing the usability of a web site. They are:

- focus groups;
- surveys;
- observational methodologies (sometimes called scenario testing); and
- error analysis.

The most effective techniques are one-on-one observational methodologies such as scenario testing. In this technique, the subject is provided with a real life scenario and closely observed as they use a site. They may be asked to explain what they are doing and why they are making certain choices, or why they are having difficulty finding or using information. You can time them in finding information as a way of benchmarking the site.

Comprehension of the information is also critical. You can often ask 10 people to read a document, and when asked if they understand they may all say yes. Yet if you ask them to explain it to you in their own words each one may respond very differently. This is also a very effective usability test, and is referred to as paraphrasing. Another technique for evaluating usability is to ask the subject to complete a scenario that requires them to read and understand some text, then make a decision or complete a task. Depending

on how they complete the task, you can then explore how they used the information to make their decision.

Follow these steps to conduct a usability test:

1. choose the variables (what you are testing);
2. choose appropriate methods;
3. choose the test sample and determine its size;
4. conduct the test;
5. analyze the results; and
6. revise the web content based on the test.

Some tips on usability include:

- The site developer should not be involved in evaluating its usability.
- Use trained, professional usability testers who are trained in observational techniques.
- Videotaping testing, or using eye tracking devices, can provide additional information.
- Use subjects that reflect your audience(s).
- Don't let subjects get caught up in what they like about the look of the site.

6.
Coordination, Accountability, and Skills Development

The Government of Alberta's Information Management Framework supports the need for:

- coordination among the various groups in information management practitioners;
- clear statements of accountability; and
- providing skills development to staff to meet the business needs of ministries.

Coordination

Planning, developing, publishing, and maintaining web content to support business needs will require coordination – at both a strategic level and at an operational level. Many ministries have established management level committees to guide the investment in and strategic use of the Internet in their businesses. In addition to these committees, most find it useful to develop a more operational committee (e.g. web team) to manage day to day production of web content.

The make-up of your management committee will, of course, change depending on whether you are managing a public web site for the entire ministry or managing an extranet site or internal intranet site. Thus, the management committee may be limited to a particular program or business area or include representatives from across the ministry.

Accountability

Three or four different groups may have responsibility for making and keeping records of web-based activity and resources. They are:

- content authors;
- web site administrators;
- records management practitioners; and
- information technology staff, such as network managers or data administrators.

Although the spread of responsibilities may vary from ministry to ministry, the important point is that responsibilities need to be assigned to individuals or positions, and documented. If your ministry has a high public profile and is particularly open to public scrutiny, it is liable – and may be called to account for – the material on its public web site. One example of the type of responsibility that must be assigned and properly documented is the capturing of individual records of web-based activity into your ministry's formal records system. It would make sense to assign this responsibility to either the content author (or responsible section), or to publications staff or to records staff, rather than to the web site administrator (who manages the web site itself). However, you might choose to handle records management activities through your web content management system under the responsibility to the web site administrator.

In this scenario, a procedure might be written which requires the web site administrator to inform responsible staff when material has been posted to or removed from the web site. This would help to ensure that the relevant administrative metadata (e.g., management and use history) is appended or linked to the original record in the records system.

Some of the main responsibilities that need to be assigned include responsibility for:

- identifying records management requirements for web-based activity;
- determining whether existing systems can satisfy these requirements or whether it is necessary to design and implement new systems or improve existing records systems;
- establishing policies and procedures governing the control and management of the web site;
- raising the profile and general awareness within the organization of the general records responsibilities of all staff, especially the need to keep records of web-based activities, and providing necessary training;
- selecting and implementing an appropriate strategy or combination of strategies to ensure records requirements are satisfied (e.g., when records need to be created and captured and how long they need to be retained);
- documenting procedures and processes to ensure strategies are carried out;
- selecting appropriate storage media and ensuring procedures and processes for long-term preservation are instituted; and
- setting-up data management procedures to ensure the integrity of the system and the authenticity of records.

You should consider developing an accountability matrix for web content that clearly outlines all the key players. For example:

Person	Responsibilities
Senior Records Officer	▪ Set records management policies and practices and develop records retention and disposition schedules.
Web Administrators	▪ Develop and manage the applications to add and remove content, collecting metadata, managing content management processes.
IT	▪ Manage back room servers and back up systems
Content Owners	▪ Maintain accuracy and currency of content and ensure that content is retained in the electronic information management (EIM) or web content management system for future access.
FOIP Coordinator	▪ Advise on the development of the privacy statement, any notices for the collection of personal information and any related access/privacy matters.

Skills development

Managing web sites will require a range of skills throughout the organization. These skills include:

- **Information Planning Skills**: identifying audiences, user needs analysis, planning for content development, and identifying gaps in information content.
- **Internet Content Design and Architecture Skills**: developing new standards for Internet content, producing content in a "layered" manner rather than the traditional "linear" manner of printed documents, writing for electronic media, understanding search strategies and how they influence design and development, navigational tools and techniques,

providing multiple paths (and entry points) to information, developing metadata and metatags, identifying appropriate links to other information.

- **Production Skills**: using new distributed content management systems, editing for electronic media, layout and design, desktop publishing, establishing and testing links, testing methodologies.
- **Site Management Skills**: establishing performance standards, quality assurance, testing methodologies, monitoring feedback, promotion and marketing, responding to or routing inquiries, compiling site statistics, security, trouble-shooting technical problems.
- **Publishing Advice and Expertise**: interpreting standards, providing advice on Internet tools, monitoring general developments in technology and uses of the Internet, maintaining an inventory of skills development tools and training.
- **Electronic Records Management Skills**: methods and mechanisms for recordkeeping in an electronic environment.

Ensuring that appropriate staff have opportunities for training and skills development is an important part of managing web content consistent with managing other information assets of the ministry.

7.
The Annual Web Management Plan

Unlike printed publications, your ministry's presence on the Internet will evolve over time.

Web content management requires an ongoing, coordinated effort across the ministry or business line that manages the web site. An annual management plan is one way to ensure that key aspects of Internet content management are addressed.

Your annual management plan should be driven by the strategic business plan and strategic communications plan for your ministry or business unit.

In addition to planning for new content, the annual management plan is a way to plan for resources needed in three key areas of managing your ministry's web presence – evaluation, marketing, and skills development.

Evaluation plan

As with any communication medium, evaluation and user feedback are essential to ensure that the communication is meeting the needs of users. In the context of the Internet, this feedback becomes essential in managing the content of the site and planning new content for the site.

The evaluation plan should consist of (a) what parts of the site will be subject to usability assessment, and (b) performance measurement of the ministry's investment in Internet content.

Marketing plan

As with all products and services, you need to promote web content to clients, and other stakeholders. In some cases, the primary goal will be to build awareness of the site and to position the site as a leading source of information.

An annual marketing plan is a means to ensure that resources are available to build awareness of and use of your content.

Skills development plan

While no longer a new medium, the Internet is different than traditional print and video media. Using this communication medium effectively requires a range of skills – many of which have not been part of staff training and skills development in the past.

On an ongoing basis managers will need to work with their staff to assess their training needs to ensure that they have the skills and time required to meet their obligation with respect to web content. In some cases resources may need to be reallocated, or new resources brought into the organization.

Establish an annual plan for skills development will help develop the necessary skills and allocate the necessary resources.